STRUCTURAL DESIGN CONSULTING INC.

2696 Lake Shore Road
Unit 130
Gilford, NH 03249-6219
Phone: (603) 293-8038

MEMORANDUM

Date: **Dec 10, 2014**
Project: **97 State Street, Portland, ME**
From: **David Tetreault**
Subject: **Response to Building Dept. Review Comments**

Attached are calculations that I prepared for support of the exterior porch floor beam as shown on Structural Section 7/A2.01. Following are the design criteria used:

Floor Dead Load	12 PSF
Floor Live Load	100 PSF
Fastener Allowable Shear	940 Pounds

Please call me if there is any question or if I can be of further assistance.

STATE OF MAINE
DAVID J. TETREAULT
No. 4840
LICENSED PROFESSIONAL ENGINEER

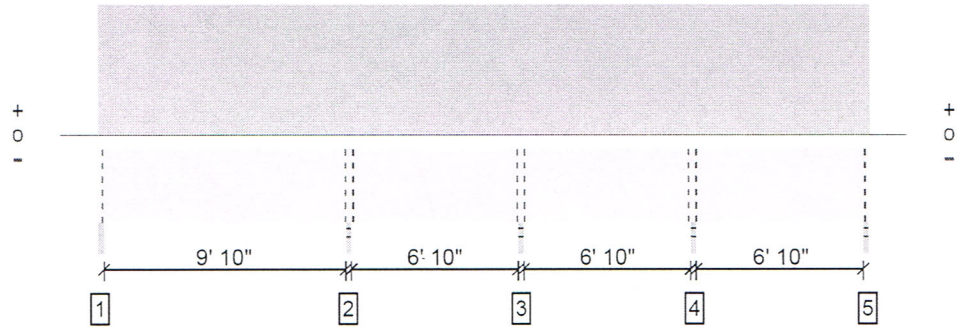
SIGNATURE: _____

FORTE

MEMBER REPORT *Porch Floor, Floor: Flush Beam* **PASSED**

3 piece(s) 2 x 8 Southern Pine No. 1

Overall Length: 30' 11 1/2"



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2653 @ 10' 1/4"	3814 (1.50")	Passed (70%)	--	1.0 D + 1.0 L (Adj Spans)
Shear (lbs)	1300 @ 9' 4 1/4"	3806	Passed (34%)	1.00	1.0 D + 1.0 L (Adj Spans)
Moment (Ft-lbs)	-2407 @ 10' 1/4"	4106	Passed (59%)	1.00	1.0 D + 1.0 L (Adj Spans)
Live Load Defl. (in)	0.137 @ 4' 8 1/16"	0.251	Passed (L/880)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.155 @ 4' 7 7/8"	0.501	Passed (L/775)	--	1.0 D + 1.0 L (Alt Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Bracing (Lu): All compression edges (top and bottom) must be braced at 25' 11 1/4" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.
- Applicable calculations are based on NDS 2005 methodology.

MAX REACTION

Supports	Bearing Length			Loads to Supports (lbs)			
	Total	Available	Required	Dead	Floor Live	Total	Accessories
1 - Beam - SYP	1.50"	1.50"	1.50"	136	901/-44	1037/-44	Blocking
2 - Stud wall - SYP	1.50"	1.50"	1.50"	350	2303	2653	Blocking
3 - Stud wall - SYP	1.50"	1.50"	1.50"	184	1690	1874	Blocking
4 - Stud wall - SYP	1.50"	1.50"	1.50"	276	1856	2132	Blocking
5 - Stud wall - SYP	1.50"	1.50"	1.50"	91	660/-87	751/-87	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 30' 11 1/2"	2' 1 1/4"	12.0	100.0	Residential - Living Areas

DESIGN LOADS

Weyerhaeuser Notes

SUSTAINABLE FORESTRY INITIATIVE

Weyerhaeuser warrants that the sizing of its products will be in accordance with Weyerhaeuser product design criteria and published design values. Weyerhaeuser expressly disclaims any other warranties related to the software. Refer to current Weyerhaeuser literature for installation details. (www.woodbywy.com) Accessories (Rim Board, Blocking Panels and Squash Blocks) are not designed by this software. Use of this software is not intended to circumvent the need for a design professional as determined by the authority having jurisdiction. The designer of record, builder or framer is responsible to assure that this calculation is compatible with the overall project. Products manufactured at Weyerhaeuser facilities are third-party certified to sustainable forestry standards.

The product application, input design loads, dimensions and support information have been provided by Forte Software Operator

MAX T.L. REACTION = 2653 lb

TLOK06 ALLOWABLE SHEAR = 940 lb

FASTENERS REQUIRED = $\frac{2653}{940} = 2.8$ USE (3) TLOK06

Forte Software Operator	Job Notes
David Tetreault Structural Design Consulting, Inc. (207) 934-8038 djt@sdcinc.biz	

9/24/2014 11:14:49 AM
Forte v4.6, Design Engine: V6.1.1.5

TABLE 1A—FASTENER SPECIFICATIONS: OLYLOG AND TIMBERLOK FASTENERS

OLYLOG®/ TIMBERLOK® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD[2,4] (inches)	UNTHREADED SHANK DIAMETER (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	BENDING YIELD[3,5] (F_{yb}, psi)	ALLOWABLE FASTENER STRENGTH	
							Tensile (lbf)	Shear[6] (lbf)
TLOK212 or LOG212	F2.5	$2^1/_2$	$1^1/_4$	0.189	0.172	167,300	1,300	940
TLOK04 or LOG004	F4.0	4	2			190,600		
TLOK06 or LOG006	F6.0	6	2					
TLOK08 or LOG008	F8.0	8	2					
LOG009	F9.0	9	2				1,145	800
TLOK10 or LOG010	F10.0	10	2					
LOG012	F12.0	12	2					
LOG014	F14.0	14	2					
LOG016	F16.0	16	2					

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.4 N, 1 psi = 6.895 kPa.

[1]For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip.
[2]Length of thread includes tip. See detailed illustration.
[3]Bending yield strength determined per methods specified in ASTM F1575 and based on the minor thread diameter.
[4]Fastener installation and design values require complete threaded portion to be embedded in the main member.
[5]Fastener bending yield strength is determined by the 5 percent diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.
[6]Allowable shear strength values apply only to shearing in the unthreaded shank portion of the fastener.

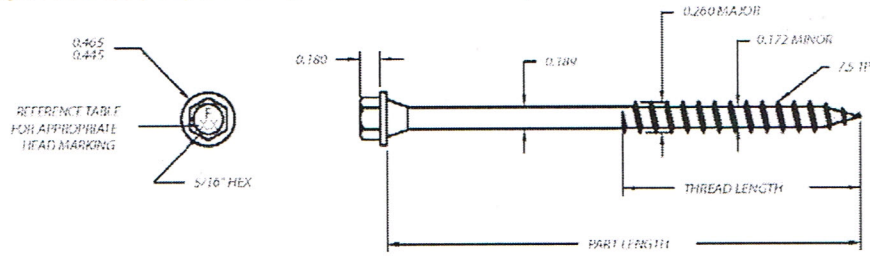


TABLE 1B—FASTENER SPECIFICATIONS: HEADLOK FASTENERS

HEADLOK® FASTENER DESIGNATION	HEAD MARKING	OVERALL LENGTH[1] (inches)	LENGTH OF THREAD[2,4] (inches)	UNTHREADED SHANK DIAMETER (inch)	MINOR THREAD (ROOT) DIAMETER (inch)	BENDING YIELD[3,5] (F_{yb}, psi)	ALLOWABLE FASTENER STRENGTH	
							Tensile (lbf)	Shear[6] (lbf)
HLGM278	F2.8HL	$2^7/_8$	2	0.191	0.172	187,300	1,215	965
HLGM412	F4.5HL	$4^1/_2$	2					
HLGM6	F6.0HL	6	2					
HLGM8	F8.0HL	8	2					
HLGM10	F10HL	10	2					

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.4 N, 1 psi = 6.895 kPa.

[1]For purposes of measuring overall fastener length, fasteners must be measured from the underside of head to bottom of tip.
[2]Length of thread includes tip. See detailed illustration.
[3]Bending yield strength determined per methods specified in ASTM F1575 and based on the minor thread diameter.
[4]Fastener installation and design values require complete threaded portion to be embedded in the main member.
[5]Fastener bending yield strength is determined by the 5 percent diameter (0.05D) offset method of analyzing load-displacement curves developed from bending tests.
[6]Allowable shear strength values apply only to shearing in the unthreaded shank portion of the fastener.